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without being fatigued. We now gave each of them half a large skin, or about forty pints, which, though but a small quantity for a thirsty camel, was sufficient to recover them from their fatigue.

We left the old Coptos road, and continued in a direction nearly south to the palm-trees of Keneh, where, after so long an abode in the desert, everything appeared new and agreeable. Ripe water-melons were in abundance, and an universal verdure surrounded us; but nothing was so striking as the profusion and negligence with which water seemed to be lavished, an article which we had been in the habit of guarding as the most precious of our provisions. The Nile had already begun to rise, and promised another rich harvest, which it only requires a more energetic people, and a better government, to render doubly profitable.

III.—*Extract of a Letter from Mr. Alexander Loudon to W. T. Money, Esq.* Dated 24th May, 1831, on his passage to Europe from Java. Communicated by Mr. Barrow, and read 28th November, 1831.

‘ IN July last, when returning from a visit to my brother-in-law, Mr. Valek, in the interior of Java, I examined, in company with several others, the *Guevo Upas*, or Valley of Poison, perhaps the most extraordinary place in the world; and as a description of it may not be uninteresting, I enclose the following copy of a letter which I have this day written to Dr. Horsefield, the botanist, who was many years in Java.

‘ “ In the publications of the Batavia Society of Arts and Sciences, I have often read with pleasure your travels and experiments, and particularly that on the *Pohu Upas*, at Barjowargée, (where I was resident in 1811,) as well as your *Tour*, published by the same Society, in the eighth volume of their Transactions. Whilst at Batur, you state (p. 24), ‘ The *Guevo Upas* is dreaded by the natives, and, according to their account, resembles the *Grotta del Cane*, near Naples: but they could not be prevailed on to conduct me to this opening.’

‘ “ The object of this letter is to acquaint you that, on the 4th July last, I visited the valley in question, on my return from a tour through the districts of Bagalun, Barjownas, and Ledok. I should be happy to have an opinion upon such a phenomenon of nature. As you have examined the mineralogical constitution of the range of mountains, I know no person so capable of giving an opinion on the Valley of Death as yourself. The following is an extract from my journal on the subject.

‘ “ *Batur, 3rd July, 1830.*—This morning, while walking about the village with the Pattv, (native chief,) he told me that

there is a valley only three miles from Batur, which no person could approach without forfeiting his life, and that the skeletons of human beings, and all sorts of birds and beasts, covered the bottom of the valley. I mentioned this to the commandant and Mr. Spracomberg, and proposed our going to see it; and the assistant resident, Mr. Daendels, agreed to go with us early next morning. At this time I did not credit all that the Javanese chief told me;—I knew that there was a lake on the top of one of the hills, which it was dangerous to approach too near, but I had never heard of this valley of death.—Very cold this morning; the thermometer 52° .

‘ “ *Batur, 4th July.*—Early this morning we made an excursion to the extraordinary valley, called by the natives Guevo Upas, or Valley of Poison; it is three miles from Batur on the road to the Djung. Mr. Daendels had ordered a footpath to be made from the main road to the valley. We took with us two dogs and some fowls, to make experiments. On arriving at the foot of the mountain we left our horses, and scrambled up the side of a hill, full a quarter of a mile, holding on by the extended roots and branches of trees, and we were a good deal fatigued before we got up, the path being very steep and slippery from the heavy rains during the night. When within a few yards of the valley, we experienced a strong nauseous, sickening, and suffocating smell; but, on coming close to the edge, this smell ceased. We were now lost in astonishment at the awful scene below us;—the valley was about half a mile in circumference,—oval, the depth from thirty to thirty-five feet, the bottom quite flat, no vegetation, a few large (in appearance) river stones, and the whole covered with the skeletons of human beings, tigers, pigs, deer, peacocks, and a great variety of birds and beasts;—we could not perceive any vapour or opening in the ground, which appeared to be of a hard sandy substance. The sides of the valley, from the top to the bottom, were covered with vegetation, trees, shrubs, &c. It was now proposed by one of the party to enter the valley; but, at the spot where we were, this was difficult, at least for me, as a false step would have been fatal, and no assistance could be given. We lighted our cigars, and, with the assistance of a bamboo, we descended to within eighteen feet of the bottom; here we did not experience any difficulty in breathing, but a sickening nauseous smell. A dog was now fastened to the end of a bamboo eighteen feet long, and sent in;—we had our watches in our hands, and in fourteen seconds he fell on his back; he did not move his limbs or look round, but continued to breathe eighteen minutes. We then sent in another, or rather he got loose from the bamboo, and walked in to where the other dog was lying; he then stood quite still, and in ten seconds fell on his face and never moved his limbs afterwards, though he continued to

breathe for seven minutes. We then tried a fowl, which died in a minute and a half;—we threw in another which died before touching the ground. During these experiments we experienced a heavy shower of rain, but were too much interested by the awful scene before us to regard it. On the opposite side of the valley is a large stone, near which is the skeleton of a human being, who must have perished on his back with his right arm under his head;—from being exposed to the weather, the bones were bleached as white as ivory. I was anxious to get this skeleton; but I soon found that any attempt to get at it would have been madness. After remaining two hours in this valley of death we began to retrace our steps, but found some difficulty in getting up; from the late heavy shower the sides of the valley had become slippery; and had it not been for two Javanese behind me, I certainly must have fallen some distance below;—being rather heavy, I held on by the branch of a tree, when my foot slipped and the branch gave way. On reaching our rendezvous we had some brandy and water, and left this most extraordinary valley,—came down the slippery footpath sometimes on our hams and hands, to the main road, mounted our horses, and returned to Batur.

‘ “The human skeletons are supposed to have been rebels who had been pursued from the main road and had taken refuge in the difficult valleys. And a wanderer cannot know his danger till he is in the valley, and, when once there, he has not the power or presence of mind to return.”

‘ You will perceive from the above extract that there is a great difference between this and the Grotta del Cane, near Naples, where the air is confined to a small aperture, while here the circumference is fully half a mile.

‘ On my arrival in London I shall be happy to hear your opinion of the mineral constitution of the hills near this extraordinary valley, where there is not the least smell of sulphur, nor any appearance of an eruption ever having taken place near it, although I am aware that the whole range is volcanic, there being two craters at no great distance from the side of the road at the foot of the Djung, which constantly emit smoke.’

[The above communication was at the same time illustrated by the following extract from a letter, written in 1825, by Mr. Hamilton, then British Envoy at the court of Naples, describing the Lago di Amsancto, (*Amsancti Valles* of Virgil,) in the province of Principato Ultra, in the kingdom of Naples. Communicated by that gentleman.]

‘ THE next morning (Friday the 17th Oct.), we started at seven from Rocca St. Felice to visit the lake of Amsanctus, about a mile and a half off. The hills here being high up among the mountains, are not

in themselves very elevated, and from the ridge of land close to us descended a variety of rills or winter streams, working their way through the soft and moist earth till they meet in a kind of valley, one side of which is still thickly wooded with a forest of chestnut trees, called *Macchia di Rocca St. Felice*; and the other would be equally so, but the ground has been cleared, and is now cultivated to within a hundred yards of the foot of the hill. Exactly where the valley begins, we found—(close under a steep shelving bank of decomposed limestone, on which were no signs whatever of vegetation, and on which we found here and there crystals of sulphate of lime, or selenite, impure sulphur, also sulphate of alumina, products of the limestone, &c., acted upon by sulphureous acid gas)—here, I say, we found a lake of a rhomboidal shape, being in its smallest dimension about twenty paces, and not more than thirty in its longest dimension, the water of which continually bubbles up over a large portion of the surface of the lake, with an explosion resembling distant thunder, though not reaching to the height of more than two feet. The water is of a dark ash colour, may be almost called black, which is the effect of its mixture with earth blackened by the effect of the sulphureous acid gas. On one side of the lake is also a constant and rapid stream of the same blackish water rushing into it from under this barren rocky hill, but the fall is not more than a few feet. A little above are apertures in the ground, through which warm blasts of sulphuretted hydrogen gas are continually issuing, with more or less noise, according to the sizes of the openings,—some are oblong, others perfectly round. On the opposite side of this small lake is another smaller pool of water, on the surface of which are continually floating in rapid undulations thick masses of carbonic acid gas, which are visible a hundred yards off. This pool is called the *Coccao*, or *Cauldron*, as having the appearance of being perpetually boiling. The larger lake is called *Mephite*, and the openings on the slope above are called *Mephitinelle*: these openings may be imagined to be the *sævi spiracula ditis* of Virgil,—and the Cauldron to be the *specus horrendum* of that poet. (*See* *Æn.* vii. 563—571.) The mephitic vapours arising from these waters are at times fatal, particularly when they are borne in a high wind in one direction. In calm weather, as was the case while we were there, the danger is much less, as the carbonic acid gas will not, in its natural state, rise more than two or three feet from the ground, so that we could walk all round the lake and Cauldron, and even step over some parts of it; but it was necessary to take care not to slip, so as to fall; as a very short time, with our faces too near the ground, would have sufficed to fix us to the spot. As it was, I had much difficulty in filling a small bottle with the water from the lake, as I was obliged to hold my

head up high while I bent down (the peasants of the neighbourhood endeavouring to alarm us more than necessary by their own fears and ignorance); nor could I stoop low enough to place an insect on the ground, on which I wished to try the experiment how long it could live on it; but we saw the dead bodies of many strewn upon the ground all round the lake. They say birds too sometimes fall down dead either into the lake or on the banks, and strayed sheep are frequently killed by the vapour. A Mr. Santoli, Inspector of Forests, who accompanied us to the spot, and who, as well as a Mr. Brocchi, an Italian chemist, has written upon this natural phenomenon, described to us as the gaseous products of the lake,—1. Carbonic acid gas; 2. Sulphuretted hydrogen gas; 3. Sulphureous acid gas; and, 4. Carbonated hydrogen gas. While Mr. Crawford was taking a view of the spot, I endeavoured to sit under the lee of a large stone among the decomposed calcareous rock; but I was soon obliged to quit my position, or rather to quit my neighbourhood to the ground, as I began to experience a disagreeable sensation in my throat, and a difficulty of breathing.

‘ In the same dip amongst the hills, and about one hundred and fifty yards from the lake, is a small stream of running water, in which, for the space of about ten yards, is a place called “The Vado Mortale,” where is also a gurguglio, or bubbling of carbonic acid gas, with a mixture of sulphureous acid gas in the stream itself. The water is here very cold, and not disagreeable, but the earth about is considerably blackened. It is curious enough that there is no appearance of volcanic products in the surrounding country.

‘ The people in the neighbourhood described to us the noise of the principal lake as much diminished since the opening of the largest of the spiracula, as well as the height to which the bubbles of the water are raised;—of course, in the lapse of many years, many changes are likely to have arisen; but it is curious to observe still so many points of resemblance with the concise description of Virgil, though much must be allowed to the imagination of the poet. Some changes have been effected of late years by an attempt, which has failed, to establish a manufactory of sulphur close by, like that in the Solfaterra, to which we may attribute the disappearance of all remains of a temple (said by Pliny to have existed on the spot) to the Dea Mephitis. There have also been some disputes between the peasantry of the neighbourhood and the lord of the soil, in consequence of their having discovered that the deposit of the water of the greater lake, being a sulphate of alumine, was a cure for the *scab* or *rot* among their sheep and cattle. In order to get a quantity of it, they dug pits close to the lake to draw the water off and let it evaporate; and when the proprietor wished to make a profit of it for himself, they opened a ditch to let the whole off at once; but Nature would not be so outwitted,



and she continues to afford a sufficient supply for all the wants of the villages around; this being connected with another quality of the lake which I have not yet mentioned, namely,—that with a constant current rushing into it, and perhaps a supply from below with the rising gas, there is no apparent exit except when it overflows during the season of the rains. Another change had been effected also by another winter torrent very near the lake, which had destroyed a small lake similar to the great one, called the Frepoli, by carrying away at once the ground around it. About a quarter of a mile from the lake, on the hill above, in the corn-fields, are also two very small pools, from which carbonic acid gas is continually escaping.

I have now told you nearly all we saw or heard at this spot, which is curious in itself, and interesting from having been celebrated by Virgil, and seldom visited by modern travellers. Swinburne was there, but says very little on the subject. Addison (and many others have followed him) thought that Amsactus was near Terni; but the authorities of Cicero, de Div. i. 36, and of Pliny, ii. 93, are quite sufficient to prove that it was in the country of the Hirpini.

The former of these writers says, that the earth at Amsanctus was *mortifera*, and the latter assures us that there was a spot near the temple of Mephitis, *quem qui intravere, moriuntur*.

IV.—*Notes of Two Expeditions up the Essequibo and Mazaroony Rivers in the Years 1830 and 1831.* Communicated by Captain J. E. Alexander, H.P., late 16th Lancers, M.R.G.S., &c.

[Captain Alexander, a member of the Royal Geographical Society, already known to the public by his travels in Persia and across the Balkan, having proceeded to Guiana and the West Indies in the spring of 1831, with the view of making a short tour there, and returning by way of New Orleans, the Vale of the Ohio, Canada, and New York, addressed the communication, of which the following is an extract, to the Society in the autumn of the same year. The early portion of it being a general account of George Town, the capital of the colony of Demerara, is omitted as less purely geographical, and likely to come before the public in another shape.]

My purpose was now to proceed up the noble Essequibo river towards the El Dorado of Sir Walter Raleigh, and view the mighty forests of the interior, and the varied and beautiful tribes by which they are inhabited. Our residence on the island of Wakenaam had been truly a tropical one. During the night, the tree frogs, crickets, razor-grinders, reptiles, and insects of every kind, kept up a continued concert. At sunrise, when the flowers unfolded themselves, the humming birds, with the metallic lustre